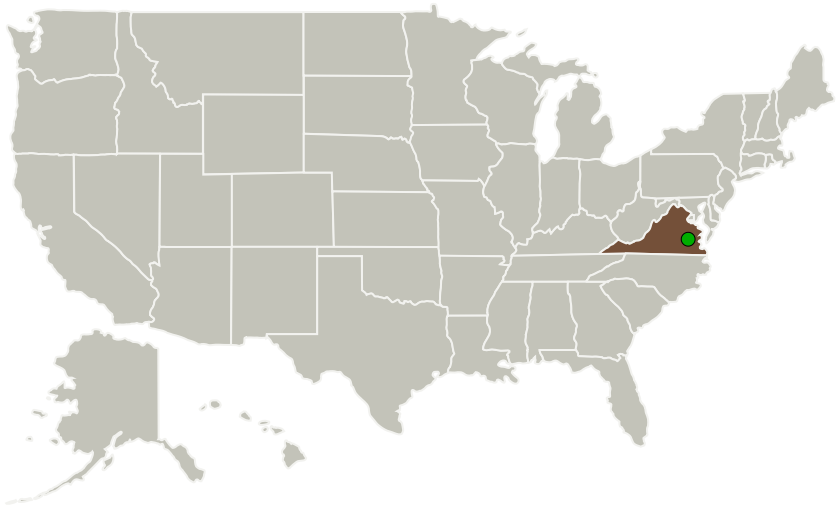
Integration of Performance Based Operations into ATM and TFM Simulations, Phase II

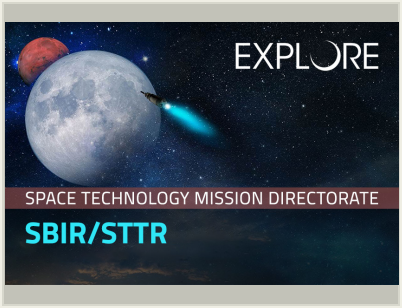
Completed Technology Project (2010 - 2012)

Project Introduction

FAA predicts that air traffic will double or even triple by 2025 and unless solutions that enable improvements in the use of airspace can be developed and implemented, significant airspace congestion will occur. Advancements in aircraft capabilities via new technologies can enable aircraft to operate more efficiently in the NAS and to operate safely in areas previously restricted. AeroTech proposes to enhance the assessment of Performance Based Operations (PBO) by implementing the Autonomous Weather Hazard Avoidance Model (AWHAM) into ATM simulations providing autonomous guidance for aircraft thru hazardous weather regions. PBO and traffic flow schemes can be assessed for any scenario by varying the detection capabilities of simulation aircraft, regulations, and/or policies, and examining deviation decisions, flight paths, safety impacts, and NAS throughput. Phase II will involve implementing the hazard avoidance model into an operational simulation and performing a proof of concept study that will establish and quantify the benefits of aircraft equipped with particular hazard detection capabilities from the perspective of an aircraft operator. AeroTech also proposes to develop the structure and architecture for integrating the AWHAM with the Autonomous Operations Planner, which provides pilots assistance in determining flight paths that comply with safety constraints and reduce operational costs.

Primary U.S. Work Locations and Key Partners





Integration of Performance Based Operations into ATM and TFM Simulations, Phase II

Table of Contents

Integration of Performance Based Operations into ATM and TFM Simulations, Phase II

Completed Technology Project (2010 - 2012)

Organizations Performing Work	Role	Type	Location
Aerotech Research	Lead Organization	Industry	Newport News, Virginia
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations
Virginia

Project Transitions

February 2010: Project Start

February 2012: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139134)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Aerotech Research

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

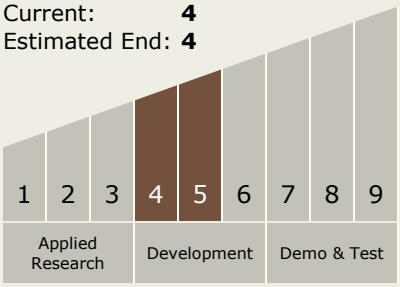
Carlos Torrez

Principal Investigator:

Paul A Robinson

Technology Maturity (TRL)

Start: **5**
Current: **4**
Estimated End: **4**



Integration of Performance Based Operations into ATM and TFM Simulations, Phase II

Completed Technology Project (2010 - 2012)

Technology Areas

Primary:

- TX16 Air Traffic Management and Range Tracking Systems
  - TX16.3 Traffic Management Concepts

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System